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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,522	09/23/2003	David A. Jackson	66396-057	2568
7590	07/15/2004		EXAMINER	
MCDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096			COHEN, AMY R	
			ART UNIT	PAPER NUMBER
			2859	
DATE MAILED: 07/15/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/667,522	JACKSON ET AL.
	Examiner Amy R Cohen	Art Unit 2859 <i>AN</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-25 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 23 September 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/23/2003.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 140, 142, 144, 146, 148, 152, 154, 156, 850R, 852R.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: 702, 704, 606, 716.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “720” has been used to designate both angle of rotation (in the specification) and visible indicator.
4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “rotation device” of claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
5. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR

1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objections to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities:

Page 7, paragraph [0038] line 5 “Fig. 2” should read --Fig. 3--.

Pages 11-12, paragraph [0056] is confusing since it refers to “304”, “316”, and “320”. It is believed that these numbers should be replaced with 704, 716, and 720 as used in the previous paragraphs.

Appropriate correction is required.

Claim Objections

7. Claims 14 and 16 are objected to because of the following informalities:

Claim 14 is lacking a period at the end of the claim.

Claim 16 is dependent on claim 1; however, it appears that claim 16 should be dependent upon claim 15. For purposes of prosecution, Examiner interprets claim 16 to be dependent upon claim 15.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-9, 12, 13, 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson (U. S. Patent No. 5,724,743) in view of Butler (U. S. Patent No. 4,718,759).

Jackson discloses a three-dimensional camera based position determination system (110), comprising: an optically scannable target (126) device fixedly attached to a target object (112-115); at least one camera and light subsystem (122), each subsystem having: an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device (148); and at least one light emitting diode (142) operatively coupled to a strobe circuit (Col 7, lines 45-50), the at least one diode and circuit being configured to emit strobed light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target (Col 7, lines 15-50 and Col 20, line 25-Col 21, line 30); and a data processing device (32, 34, 36, Fig. 2) operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image.

Jackson discloses the position determining system wherein the at least one light emitting diode is an array of light emitting diodes (Col 21, lines 1-15).

Jackson discloses the position determining system comprising a visible indicator (119) that emits light within the visible spectrum, thereby indicating that the at least one light emitting diode is operative.

Jackson discloses the position determining system wherein the number of light emitting diodes in the array is sixty-four (Col 21, lines 1-15).

Jackson discloses the position determining system wherein the target object is a vehicle wheel (112-115), and the data processing device is further configured to determine proper wheel alignment based on orientation of the vehicle wheel (Abstract).

Jackson discloses the position determining system wherein the image sensing device includes an electronic shutter that is synchronized with the at least one strobbed light emitting diode such that an image is captured only when a target is illuminated (Col 7, lines 15-50).

Jackson discloses the position determining system wherein the image sensing device sensing device is a charge-coupled device video camera (Col 21, lines 16-20).

Jackson discloses the position determining system comprising: a current source configured to supply a current to the at least one light emitting diode (Col 21, lines 1-15, current must be supplied since the device is electronic).

Jackson discloses the position determining system comprising: a target object indicator (119) that displays the status/state of the target acquisition by the data processing device (Col 26, line 40- Col, 27, line 8).

Jackson discloses a three-dimensional camera based position determination system, comprising: sensing means for sensing an image of the target device, and generating image information indicative of geometric characteristics of the target device; and emission means for emitting strobbed light that illuminates the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target; and data processing means for determining the orientation of the target object based on the generated target image (Col 20, line 25-Col 21, line 56).

Jackson discloses the position determining system comprising: attachment means (128) for fixedly attaching an optically scannable target device (130) to a target object (Fig. 9).

Jackson discloses the position determining system comprising directional means for indicating the direction in which a target object should be repositioned, and for indicating that a target object has been properly positioned (Col 21, line 31-Col 22, line 61).

Jackson does not disclose a position determining system wherein the light emitting diode emits an invisible light; wherein the light is infrared light.

Butler discloses a position determining system (Fig. 1) wherein the light emitting diode emits an invisible light; wherein the light is infrared light (Col 7, lines 28-42 and Col 16, lines 5-9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the position determining system of Jackson so that the light emitting diode emit infrared light, as taught by Butler, since Butler discloses that infrared light is more accurately read electronically (Butler, Col 7, lines 39-42).

Regarding the number of invisible light emitting diodes in the array being eighty: Jackson and Butler disclose a position determining system where the number of invisible light emitting diodes in the array is sixty-four. However, to choose a value for the number of diodes in the array to be eighty, absent any criticality, is only considered to be the “optimum” value of the number of diodes in the array, as stated above, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy and since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the number of invisible light emitting diodes in the array of Jackson and Butler to have eighty invisible light emitting diodes in order to have more diodes in

the array, increasing the accuracy of the array and hence, the accuracy of the position determining system.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson and Butler as applied to claims 1-9, 12, 13, 17-25 above, and further in view of Stam et al. (U. S. Patent No. 5,923,027).

Jackson and Butler disclose the position determining system as described above in paragraph 9.

Jackson and Butler do not disclose a position determining system wherein the image sensing device is a complimentary metal oxide semiconductor camera.

Stam et al. discloses an image sensing device, which is a complimentary metal oxide semiconductor camera (Col 5, lines 45-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image sensing device of Jackson and Butler to be a complimentary metal oxide semiconductor camera, as taught by Stam et al., since the complimentary metal oxide semiconductor camera is both economical and highly sensitive and therefore, more cost effective and accurate (Stam et al., Col 5, lines 45-58).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson and Butler as applied to claims 1-9, 12, 13, 17-25 above, and further in view of Admitted Prior Art found on pages 14-15, paragraph [0071] (hereinafter Prior Art).

Jackson and Butler disclose the position determining system as described above in paragraph 9.

Jackson and Butler do not disclose a position determining system comprising a rotation device configured to rotate, prior to use, one or more invisible light emitting diodes on a circuit

board such that illumination from the invisible light emitting diodes to the target is more evenly distributed.

Prior Art discloses a position determining system comprising a rotation device configured to rotate, prior to use, one or more light emitting diodes on a circuit board such that illumination from the light emitting diodes to the target is more evenly distributed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the position determining system of Jackson and Butler to include a rotation device, as taught by Prior Art, in order to provide evenly distributed light, since such equipment used for this purpose is already known in the art (Prior Art, paragraph [0071]).

12. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson and Butler as applied to claims 1-9, 12, 13, 17-25 above, and further in view of Mathes et al. (U. S. Patent No. 4,457,172).

Jackson and Butler disclose the position determining system as described above in paragraph 9.

Jackson and Butler do not disclose a position determining system comprising: a target object indicator array that includes at least one set of target object indicator light emitting diodes, wherein each light emitting diode of the first set corresponds to a target object; wherein the target object indicator array further includes a second set of target object indicator light emitting diodes, wherein each light emitting diode of the second set corresponds to a target object; and wherein the target object indicator array is operatively coupled to the data processing device such that the first set of target object light emitting diodes is energized when an image of the target object is acquired by the data processing device, thereby indicating that the target object is acquired by the data processing device, and the second set of target object light emitting diodes

is energized when an image of the target object is not acquired by the data processing device, thereby indicating that the target object is not acquired by the data processing device; at least two sets of directional light arrays, each of the sets of directional light arrays including at least one directional light emitting diode, and wherein, the at least two sets of directional light arrays are operatively coupled to the image sensing device such that when a single set of directional light is energized, a direction is indicated in which the target object should be repositioned such that the image sensing device may sense the target object and wherein, when all directional light arrays are on, the target object has been properly positioned; wherein the number of directional light arrays is four, and the directions in which the vehicle should be repositioned as indicated by the four arrays are backward, forward, left and right.

Mathes et al. discloses a position determining system (Figs. 1-8) comprising: a target object indicator array (34) that includes at least one set of target object indicator light emitting diodes (35-1, 35-2, 36-1, 36-2), wherein each light emitting diode of the first set corresponds to a target object (Col 10, line64-Col 11, line17); wherein the target object indicator array further includes a second set of target object indicator light emitting diodes (35-1, 35-2, 36-1, 36-2), wherein each light emitting diode of the second set corresponds to a target object (Col 10, line64-Col 11, line17); and wherein the target object indicator array is operatively coupled to the data processing device such that the first set of target object light emitting diodes is energized when an image of the target object is acquired by the data processing device, thereby indicating that the target object is acquired by the data processing device (Col 10, line64-Col 11, line17), and the second set of target object light emitting diodes is energized when an image of the target object is not acquired by the data processing device, thereby indicating that the target object is not acquired by the data processing device (Col 10, line64-Col 11, line17); at least two sets of

directional light arrays (35-1, 35-2, 36-1, 36-2), each of the sets of directional light arrays including at least one directional light emitting diode, and wherein, the at least two sets of directional light arrays are operatively coupled to the image sensing device such that when a single set of directional light is energized, a direction is indicated in which the target object should be repositioned such that the image sensing device may sense the target object and wherein, when all directional light arrays are on, the target object has been properly positioned (Col 10, line64-Col 11, line17); wherein the number of directional light arrays is four, and the directions in which the vehicle should be repositioned as indicated by the four arrays are backward, forward, left and right (Col 10, line64-Col 11, line17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the position detecting device of Jackson and Butler to include target object indicator arrays and direction light arrays, as taught by Mathes et al., so that the user could have a clear, simple visual indicator to indicate the status of the target object in addition to the computer display (119 of Jackson and Butler).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose position detecting devices Burns, Jr. (U. S. Patent No. 6,744,497), Jackson et al. (U. S. Patent No. 6,661,505), McClenahan (U. S. Patent No. 6,600,555), Jackson et al. (U. S. Patent No. 6,532,062), Ripingill, Jr. et al. (U. S. Patent No. 6,473,980), Nobis et al. (U. S. Patent No. 6,404,486), Jackson (U. S. Patent No. 6,148,528), Douine et al. (U. S. Patent No. 5,648,846), Kling, III et al. (U. S. Patent No. 5,335,420), and Florer et al. (U. S. Patent No. 4,095,902).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARC
July 8, 2004



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